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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/000,330 05/20/98 NAKAMURA

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EXAMINER

DATE, J ART UNIT	PAPER NUMBER
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1753  
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.

09/000,330

Applicant(s)

NAKAMURA et al

Examiner

J. DOTE

Group Art Unit

1753

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- ☒ Responsive to communication(s) filed on 9/14/01
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 16-19, 21-25 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 16-19, 21-25 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

## Application Papers

- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner
- ☒ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☒ All ☐ Some\* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_ ☐ Interview Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892 ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948 ☐ Other \_\_\_\_\_

Office Action Summary

1. The request filed on Sep. 14, 2001 in Paper No. 19 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/000,330 is acceptable and a CPA has been established. An action on the CPA follows.

2. The examiner acknowledges the cancellation of claims 6-15 and the addition of claims 16-25 filed in Paper No. 14 on Apr. 16, 2001, which was entered as requested by applicants upon the filing of the CPA. The examiner also acknowledges the cancellation of claim 20 and the amendments to claims 16-19 and 22-24 filed in Paper No. 17 on Jul. 23, 2001, which was entered as requested by applicants upon the filing of the CPA. Claims 16-19 and 21-25 are pending.

3. The objection to the specification set forth in the Office action mailed Oct. 12, 2000, Paper No. 12, paragraph 4, has been mooted by the cancellation of claim 15.

The rejection of claims 6, 12/16, and 13/16 under 35 U.S.C. 102(b) over Japanese Patent 58-149060 (JP'060) (see PTO translation for cites), set forth in Paper No. 12, paragraph 11, has been withdrawn in response to the cancellation of claims 6, 12, and 13, and the addition of claim 16, which now requires that the cyclic polyolefin resin be a copolymer derived from an alpha-olefin and an alicyclic compound having a double bond. JP'060

discloses a toner comprising a binder resin comprising polynorbornene and a styrene-acrylate resin. JP'060 does not disclose or suggest the use of a cyclic copolymer as recited in instant claim 16.

The rejection of claims 6, 12/6, 13/6, and 14/6 under 35 U.S.C. 103(a) over US 5,324,616 (Sacripante) combined with the Handbook of Imaging Materials, page 169, set forth in Paper No. 12, paragraph 12, has been withdrawn in response to the cancellation of claims 6, 12, and 13, and the addition of claim 16 as described supra. Sacripante discloses a toner comprising a binder resin comprising polycyclic olefin, such as polynorbornene. Sacripante does not disclose or suggest the use of a cyclic copolymer as recited in instant claim 16.

4. The disclosure is objected to because of the following informalities:

(1) The specification at page 3, lines 5-6, and at page 5, line 9, discloses a polyolefin resin of a cyclic structure having an intrinsic viscosity of 0.25 dl/g or more, and a polyolefin resin of a cyclic structure having an intrinsic viscosity of less than 0.25 dl/g, respectively. Intrinsic viscosity refers to "the limiting value at infinite dilution of the specific viscosity of a polymer, referred to its concentration." See Grant & Hackh's Chemical Dictionary, fifth edition, page 621. Thus, the

intrinsic viscosity of a polymer appears to be dependent on the solvent in which the polymer is dissolved and the temperature of the solution. Because the specification does not disclose the conditions under which the intrinsic viscosities are determined (e.g., solvent, temperature, etc.), the disclosure is inadequate to inform the ordinary worker in the art of all the information necessary to make and use the claimed invention.

(2) The specification at page 3, lines 6-7, and at page 5, lines 10-11, discloses a polyolefin resin of a cyclic structure having a heat distortion temperature (HDT) determined by DIN53461-B of 70°C or higher, and a polyolefin resin of a cyclic structure having a heat distortion temperature (HDT) determined by DIN53461-B lower than 70°C, respectively. However, the specification does not define the standard DIN53461-B, or the experimental conditions under which the HDT is determined. Furthermore, the specification does not disclose the date of the particular version of the standard that was used.

Appropriate correction is required.

Applicants' arguments filed in Paper Nos. 14 and 17 with respect to the objections have been fully considered but they are not persuasive.

(1) Applicants in Paper No. 14, page 7, argue that the intrinsic viscosity is determined by DIN 53728 standard for measuring polyolefin viscosity, where decahydronaphthalene (or in

decalin solvents) is used as the solvent, and temperature is 135°C.

However, the instant specification does not disclose how the intrinsic viscosity is determined, let alone by the standard DIN 53728. There is no evidence in the instant specification that the intrinsic viscosity is or was determined by the DIN standard.

Applicants argue in Paper No. 17, pages 7-8, that the skilled artisan would have known that the intrinsic viscosities are determined by the standards set forth in the specification. Applicants argue that there would be no undue experimentation to calculate the intrinsic viscosity of the polyolefin recited in the instant claims. Applicants submit the standards ASTM D 1601-86 and ISO 1628-3 in Paper No. 17, Exhibits 2 and 4, in support of their position.

Contrary to applicants' comments, as discussed supra, the instant specification does not disclose how the intrinsic viscosity is determined, let alone any standard used to determine the intrinsic viscosity. The specification does not disclose that the intrinsic viscosity is determined by ASTM D 1601-86 standard for ethylene polymers or by ISO 1628-3:1991 standard for polyethylenes and polypropylenes. Moreover, the copy of the ISO standard is incomplete. Applicants only provided pages 1, 3, and 5. Furthermore, the ASTM and ISO standards do

not appear to be the same. For example, the ASTM standard at page 332 discloses that the intrinsic viscosity is determined by plotting four logarithmic viscosity numbers versus their respective concentrations on rectilinear graph paper. Then a straight line is drawn through the points and extrapolate to zero concentration. The intrinsic viscosity is the intercept of the line at zero concentration. In contrast, the ISO standard at page 5 discloses that the limiting viscosity (i.e., intrinsic viscosity) is calculated by using the equation  $[\eta] = VN/(1+kc+VN)$  where  $k$  is a coefficient depending on polymer concentration and polymer structure. (The parameters  $V$ ,  $N$ , and  $c$  are not defined in the pages provided by applicants.) The ISO standard further discloses that the precision of this "test method is not known because inter-laboratory data are not available. This method may not be suitable for use in specifications or in case of any disputed results as long as these data are not available." Accordingly, since the specification does not disclose how the intrinsic viscosity is determined, nor does the specification disclose what standard is used to determine the viscosity, it would require undue experimentation for a person having ordinary skill to determine the intrinsic viscosities recited in the instant claims.

The experimental conditions under which the intrinsic viscosities are determined are essential subject matter since

they are necessary to describe and enable the instant claimed subject matter.

Applicants are reminded that essential subject matter cannot be incorporated by reference to non-patent literature, but must be fully disclosed in the specification as filed.

MPEP 608.01(p)A, 8th edition, Aug. 2001.

(2) Applicants assert that the skilled artisan would, by definition, have known how to determine the heat deflection temperature (HDT), and know the experimental protocol and conditions necessary to achieve it. Applicants argue that consequently, any hypothetical change of, or revisions to, DIN 53461 would be irrelevant because, at the time of filing of the instant application, the skilled artisan would understand that the DIN standard could be used to practice the instantly claimed invention. Applicants submit an English-translation of DIN 53461-B in Paper No. 14, Exhibit 1, and standards ASTM D 648-96 and ISO 75-2, in Paper No. 17, Exhibits 1 and 3, in support of their position.

However, the instant specification does not adequately define DIN 53461-B. Nor does the instant specification disclose the experimental conditions under which the HDT was determined. The determination of HDT is essential matter, since it is necessary to describe and enable the instant claimed subject matter. Essential subject matter cannot be incorporated by



reference to non-patent literature, but must be fully disclosed in the specification as filed. MPEP 608.01(p)A.

It is not clear why applicants submitted the ASTM and ISO standards because the instant specification discloses that the HDT is determined by DIN 53461-B, which appears to be different. (The copy of the ISO standard is incomplete. Applicants only provided pages 1 and 3.) The DIN, ASTM, and ISO standards do not appear to be the same. For example, the ASTM standard at page 57 discloses that the ISO 75-2-1993 test method, is "technically equivalent [to the ASTM D 648-96] only when the 120 by 10 by 4 mm test specimen is used and deflection temperature is measured at a depth of deflection that is a function of the depth of the specimen, and when the 5-min waiting period is applied." The ASTM standard further discloses that the HDT is determined "when the test bar has deflected 0.25 mm (0.010 in)." In contrast, the DIN standard at page 3 of the translation, discloses that the HDT is the temperature at which the bending test body has attained a defined deflection --- corresponding to an outer fiber strain of approximately 0.2%.

Moreover, there is no evidence on the present record to show that the version of the German standard DIN 53461-B described in the English translation is that used in the instant specification, because the specification does not disclose the version (i.e., date) of the standard disclosed in the

specification. Also the organizations implementing these standards have the authority to modify standards, the connection of the instant claims to these standards, as recited, may vary over time. If the standard were to change, the instant disclosure would no longer support the claim limitations; in short, the recited claim limitations would not be enabled. This is made evident by the ISO standard provided in Paper No. 17, Exhibit 3, page 1, which discloses that "all standards are subject to revision, and parties to agreements based on this part of ISO 75 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below." The instant specification simply does not disclose that the standard applied at the filing date of the instant application was that disclosed in the English translation. Hence, it would be undue experimentation for a person having ordinary skill in the art to determine the HDT recited in the instant claims, because that person would not know what version of the standard is to be used in determining the recited HDT. In fact, any such "determination" would inevitably require speculation.

Accordingly, for the reasons given above, the objections stand.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 17, 18, 19/(17,18), 21/(17,18), 22/(16-18), 23/(16-18), 24/(17,18), and 25/(17,18) are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 17 and 18, and claims dependent thereon are indefinite in the limitations "an intrinsic viscosity (i.v.) of less than 0.25 dl/g" and "an i.v. of 0.25 dl/g or more" because it is not clear what are the scopes of said limitations. Neither the instant claims nor the specification define the conditions under which the recited intrinsic viscosities are determined. See the discussion in item (1) of paragraph 4, supra.

Claims 17 and 18 and claims dependent thereon are indefinite in the limitations "a heat distortion temperature (HDT) by DIN53461-B of lower than 70°C" and "a HDT of 70°C or higher" because it is not clear what are the scopes of said limitations. The instant specification does not define the standard DIN53461-B. The instant specification does not disclose the conditions and criteria used in the standard used to determine

the HDT, nor does it disclose the date or version of DIN53461-B. Standards can and do change over time: hence it is not clear what version of DIN53461-B was used, nor what version is intended in the claims.

Claim 19/17,18 is indefinite in the phrase "Mw/Mn ratio . . . is from 1 to 2.5" because it is not clear to what material the Mw/Mn ratio refers, e.g., the low-viscosity resin, or the high-viscosity resin, or the "polyolefin having a cyclic structure," which comprises both the low- and high-viscosity resins.

Claim 22/16-18 is indefinite in the phrase "binder resin consists of 1 to 100 parts by weight of a polyolefin resin having a cyclic structure having an intrinsic viscosity (i.v.) of 0.25 dl/g or more . . . in a proportion less than 50% by weight based on the binder resin" (emphasis added) because it is not clear whether the polyolefin resin recited in claim 22 is the "polyolefin resin having a cyclic structure" recited in claim 16 or the "high-viscosity resin" recited in claims 17 and 18, or whether the resin is necessarily another polyolefin.

If the polyolefin resin recited in instant claim 22 refers to the "high-viscosity resin" recited in instant claims 17 and 18, claim 22/17,18 is further indefinite in the above phrase because claim 22 is outside the scope of instant claims 17 and 18. Applicants state in Paper No. 11 filed on Jul. 18, 2000,

page 10, lines 14-17, that "the proportion of less than 50% by weight" can "indeed be 0%." Claims 17 and 18, however, require the presence of the "high-viscosity" resin.

Claim 23/16-18 is indefinite in the phrase "binder resin consists of 1 to 100 parts by weight of a polyolefin resin having a cyclic structure" (emphasis added) because it is not clear whether the polyolefin recited in claim 23 is the "polyolefin resin having a cyclic structure" in claims 16, 17, or 18, or whether the resin is necessarily another polyolefin.

Claim 23/16-18 is also indefinite in the phrase "one resin selected from the group consisting of polyester resins, epoxy resins . . . or styrene-acrylate resins" (emphasis added) for improper Markush language. Proper Markush language is "R is selected from the group consisting of . . . and . . . " or "R is . . . or . . . " MPEP 2173.05(h). Applicants are using a combination of both phrases. Hence, it is not clear what is the scope of the instant claims.

Applicants' arguments filed in Paper Nos. 14 and 17 have been fully considered but they are not persuasive.

Applicants argue that the amendments to the claims filed in Paper No. 17 overcome the above rejections. However, for the reasons set forth above, the amendments to claims 17, 18, 19, 22, and 23 did not overcome the rejections. In addition, for the reasons set forth in the above rejections and in paragraph 4,

supra, the rejections with respect to "intrinsic viscosity" and "heat distortion temperature (HDT)" stand.

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 17, 18, and 19-25/(17,18) are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Instant claims 17 and 18 recite a low viscosity resin having a "heat distortion temperature (HDT) by DIN53461-B of less than 70°C" and an "intrinsic viscosity of less than 0.25 dl/g," and a high viscosity resin having a "HDT of 70°C or more" and an "i.v. of 0.25 dl/g or more." Claim 22 recites a polyolefin resin with a cyclic structure having a "heat distortion temperature (HDT) by DIN53461-B of 70°C or more" and an "intrinsic viscosity of 0.25 dl/g or more."

However, the instant specification does not disclose adequately how these experimental parameters are determined. The specification at page 3 merely discloses HDT by DIN53461-B and the recited intrinsic viscosity. The specification does not disclose what is DIN53461-B, nor what version or date of the standard was used. Furthermore, the organizations implementing the standard DIN53461-B presumably have the authority to modify standards, so any connection the instant claims may have to this standard, as recited, may vary over time. If the standard were to change, the disclosure would no longer support the claim limitations, and therefore the claim limitations would not be enabled.

Moreover, the specification is silent on the experimental conditions under which the intrinsic viscosity is determined. The specification does not even disclose that the viscosity is determined by any known standard. As argued supra, the intrinsic viscosity of a polymer appears to be dependent on the solvent in which the polymer is dissolved and the temperature of the solution.

Accordingly, it would require undue experimentation for one of ordinary skill in the art to determine the experimental parameters needed to obtain the instant claimed numerical ranges.

Applicants' arguments filed in Paper Nos. 14 and 17 have been fully considered but they are not persuasive.

However, for the reasons set forth in the above rejection and in paragraph 4, supra, the rejections stand.

9. The recitation in claim 22/16 that the recited polyolefin resin having a cyclic structure that has the recited intrinsic viscosity, molecular weight and HDT "is contained in a proportion of less than 50 % by weight based on the entire binder resin" reads on "zero weight percent." In other words, the recited polyolefin need not be present in the toner. This reading is consistent with the "inventive" examples of the specification. The examples 1, 3, 4, 6-8, 10-18 and 20-27, which are labeled inventive, comprise toners that contain only one polyolefin having a cyclic structure. However, these polyolefins do not have the intrinsic viscosity, molecular weight and heat distortion temperature recited in instant claim 22. Applicants have agreed with this interpretation. See Paper No. 11 filed on Jul. 18, 2000, page 10, lines 14-17, where applicants state that "the proportion of less than 50% by weight" can "indeed be 0%." Rejections made in view of this reading of claim 22/16 follow infra.

10. Claims 6, 22/16, 23/16, 24/16, and 25/16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 2-184864 (JP'864) (see PTO translation for cites) combined with



page 13 of Grant & Hackh's Chemical Dictionary, fifth ed., and Diamond, Handbook of Imaging Materials, page 169.

JP'864 discloses a toner that comprises a colorant and a binder resin comprising a "cyclopentadiene-type" polymer (which is a polyolefin resin having a certain cyclic structure). Translation, page 2, lines 8-14; Working Examples 8-24 at pages 20-22; and JP'864, page 631. The cyclopentadiene-type copolymer can be a copolymer obtained from dicarboxy diallyltricyclo(5,2,1,0<sup>26</sup>)-decane ("DDD"), lauryl methacrylate, methacrylic acid, and divinylbenzene. Translation, Polymerization Example 2 at pages 7-8. The copolymer obtained from DDD comprises carboxy groups, thereby meeting the limitations of claims 24/16. DDD comprises saturated tricyclo(5,2,1,0<sup>26</sup>)-decane and allyl groups, thereby meeting the limitation of "alicyclic compound having a double bond" recited in instant claim 6. Divinyl benzene is a diene monomer. Methacrylic acid is an alpha olefin acid. See Grant & Hackh's Chemical Dictionary, fifth ed., page 13. Thus, the copolymer comprises saturated tricyclo(5,2,1,0<sup>26</sup>)-decane groups and carboxy groups, and meets the limitations of claims 16 and 24/16. The copolymer is also crosslinked by divinyl benzene, a diene, and therefore meets the limitation of claim 25/16.

JP'864 discloses that JP'864's toner can be fixed by heating and prevents toner offset. Translation, page 4, line 24, and

page 5, line 7. JP'864 further discloses that since the cyclopentadiene-type polymer has a large number of allyl groups, the allyl groups can readily undergo a polymer radical reaction. Thus, the toner can be fixed by ultraviolet-cure. In other words, the cyclopentadiene polymer can be crosslinked. JP'864 discloses that JP'864's toner provides toner images with increased density, and has good resolving power and fixing properties. Translation, page 4, lines 17-25; page 5, lines 16-25.

JP'864 does not exemplify a toner that comprises a charge controlling agent. However, JP'864 discloses that a polarity-controlling agent, i.e., a charge control agent, can be incorporated in its toner. Translation, page 6, lines 21-22. The use of charge control agents is well-known in the art. Diamond discloses that it is known to add charge control additives to toners when the pigment blended into the polymer resin does not give an adequate charge level or rate of charging. This applies to both negative and positive charging applications. Diamond further discloses a number of known charge control agents, including nigrosine and metal complexes, that effectively give the toner a positive or negative charge. Diamond, page 159, section 4.2.3.

It would have been obvious to a person having ordinary skill in the art, in view of the teachings of JP'864 and Diamond, to

add a charge control agent to the toner disclosed by JP'864, because that person would have had a reasonable expectation of successfully obtaining a positively or negatively charged toner having an adequate charge level and rate of charging that provides toner images with increased density, and has good resolving power and fixing, as taught by JP'864.

Applicants' arguments filed in Paper Nos. 14 and 17 have been fully considered but they are not persuasive.

Applicants argue that JP'864 does not render the instant claimed toner obvious because JP'864's cyclopentadiene-type copolymer resin differs from the copolymer recited in the instant claims. Applicants argue that JP'864's copolymer relates to the combination of two cyclic compounds, not to an alicyclic and an alpha olefin as recited in the instant claims. See Paper No. 17, page 12.

However, the instant claims do not exclude JP'864's copolymer. The term "alicyclic compound" is usually defined as a compound containing a carbon containing ring whose properties are aliphatic rather than aromatic. See Grant and Hackh's Chemical Dictionary, fifth edition, page 22. As discussed in the above rejection, JP'864's cyclopentadiene-type copolymer meets the limitations recited in instant claims 16, 24/16, and 25/16.

Applicants further argue in Paper No. 17, page 12, that a skilled artisan would understand that a polarity control agent

is not the same as a charge control agent. Applicants argue that a charge control agent ensures stable charge; a polarity control agent does not.

Applicants have not provided any evidence to support their allegation that a polarity control agent is not another name for a charge control agent. The term "polarity" is usually defined as the condition of being positive or negative with respect to some reference point, or object, as electricity. See Webster's New World Dictionary, third college ed., page 1044. As set forth in the above rejection, Diamond discloses that charge control additives are added to toners to provide adequate charge level or rate of charging, in both negative and positive charging applications. Diamond, page 159, section 4.2.3. Thus, the predominance of the objective evidence of record indicates that a person of ordinary skill in the art would have recognized that the JP'864's term "polarity control agent" is another name for "charge control agent."

Accordingly, for the reasons set forth above and in the rejection, the instant claimed toner is rendered obvious over the prior art.

11. Claims 16, 21/16, 22/16, and 23/16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,817,843 (Masuda) combined with US 5,741,617 (Inaba) and US 5,179,171 (Minami).

Masuda discloses a toner that comprises a colorant, a quinizarin dye, and a binder resin. Col. 24, lines 57-62, and examples 63-88 at col. 50. Masuda discloses that said toner provides clear color lightfastness images free from fogging. Col. 50, lines 32-44.

Masuda discloses that toner can further comprise an "antistatic agent" such as metals of salicylic acid, organic salts of boron, quaternary ammonium compounds, metal complexes of imidazole, and pyridinium salts. Col. 25, lines 33-39. Masuda discloses that said antistatic agents control the electrification of the toner without affecting the color tone of the toner. Col. 25, lines 29-32. Masuda does not identify the antistatic agents as charge control agents as recited in the instant claims. However, the Masuda's antistatic agents have the same function as charge control agents, namely, to control the charge level, i.e., the electrification, of the toner. Inaba identifies metals of salicylic acid, boron compounds, quaternary ammonium compounds, and imidazole compounds as charge control agents. Col. 13, lines 51-60. Accordingly, the antistatic agents disclosed by Masuda are charge control agents. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Masuda does not disclose that the binder resin is a polyolefin resin having a cyclic structure as recited in the instant claims. However, Masuda discloses that the binder resin

can be any binder resin known in the art. Col. 24, lines 61-62. Masuda further discloses that the binder resin can be alicyclic hydrocarbon resins. Col. 25, lines 23-24.

Minami discloses a random copolymer resin having a cyclic structure that meets the limitations of the instant claims. Minami discloses that the low molecular weight random copolymers can be used as electrophotographic toners. Col. 15, lines 58-59, and col. 16, line 2. The random copolymer is obtained from ethylene and at least one cycloolefin, such as bicyclo[2,2,1]hept-2-ene, which is incorporated in the polymer chain without ring opening. Col. 4, line 30, to col. 8, line 5. The random copolymer comprises saturated alicyclic groups meeting the limitations of claim 6. Ethylene and the cycloolefin meet the limitations of claims 16 and 21/16.

Minami teaches that his random copolymers have excellent transparency, thermal resistance, dielectric properties, and mechanical properties. Col. 4, lines 16-21.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Minami, to use Minami's random copolymer obtained from ethylene and a cycloolefin as the binder resin in the toner disclosed by Masuda, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic color toner having the properties disclosed by Masuda and excellent transparency.

Applicants' arguments filed in Paper Nos. 14 and 17 have been fully considered but they are not persuasive.

Applicants argue in Paper No. 14, page 15, and Paper No. 17, pages 13-14, that the a skilled artisan in the art would not be motivated to use the instantly claimed cyclic olefin copolymer in Masuda's toner. Applicants argue that skilled artisan would consider a cyclic olefin copolymer to be distinguishable from Masuda's disclosure of alicyclic hydrocarbon resin. Applicants argue that there is no motivation to use a cyclic olefin as recited instant claims in Masuda.

Applicants' arguments are contradicted by Masuda. As set forth in the rejection, Masuda discloses that the toner binder resin can be any well-known toner binder resin in the art. Masuda discloses that such resins include "alicyclic hydrocarbon resins." Alicyclic hydrocarbon resins encompass Minami's cyclic olefin copolymers. Minami teaches cyclic olefin copolymers, which meet the cyclic polyolefin recited in the instant claims. Minami discloses that his copolymers have excellent thermal resistance in addition to excellent dielectric properties, mechanical properties, and transparency. Minami teaches that said copolymers can be used in electrophotographic toners. Accordingly, the references provide reason, suggestion, and motivation, to use Minami's cyclic olefin copolymer as the toner binder resin in Masuda's toner.

Applicants argue in Paper No. 14, page 15, and in Paper No. 17, page 14, that Inaba and Minami are related to waxes. Applicants argue that the instant claimed toner does not use a wax. Applicants argue that both Inaba and Minami teach away from the instant claimed invention because the skilled artisan would have known that when a wax used as a toner binder resin, the toner is fixed to a substrate by "cold pressure fixing," while applicants' invention is directed to a toner used in forming an image that is fixed by a "heat roller fixing means."

However, Inaba is cited to show that the compounds disclosed as antistatic agents by Masuda are also known in the art as charge control agents, not for the disclosure of Inaba's disclosure of waxes. Furthermore, the instant claims do not exclude the cyclic polyolefin copolymer recited in the instant claims from being a wax. Nor does the instant specification define the cyclic polyolefin copolymer recited in the instant claims as not being a wax. Instant claim 16 merely recites that the binder resin includes a polyolefin copolymer resin having a cyclic structure. In fact, Masuda discloses it is well-known in the art that waxes, such as paraffin waxes, can be used as toner binder resins. Masuda, col. 25, line 25.

Moreover, applicants' arguments that adherence of a toner comprising a wax binder resin to a substrate is only achieved by cold pressure fixing, not by a heat roller fixing means, are mere



attorney arguments. There is no evidence on the present record to support applicants' allegation. The instant claims merely recite that the toner can be used for "developing an . . . image . . . wherein the . . . image is fixed using a heat roller fixing means." That recitation is intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Furthermore, the recitation merely requires that the toner be capable of being fixed with a heat roller fixing means. One of ordinary skill in the art would have known to adjust the fixing temperature to soften the toner's wax binder resin, so the toner would be fixed to the substrate, such as paper. There is no evidence on the present record to show that a toner comprising Minami's low molecular weight cyclic polyolefin, let alone a toner wax binder resin, is not capable of being fixed with a heat roller fixing means. As set forth in the rejection, Minami teaches a cyclic polyolefin that meets the cyclic polyolefin recited in instant claims 16 and 21/16. Minami teaches that his low molecular weight cyclic olefin copolymers can be used in

electrophotographic toners. Thus, for the reasons set forth in the above, and in the rejection, Minami does not teach away from the cyclic polyolefin resin recited in the instant claims.

Accordingly, for the reasons set forth above and in the rejection, Minami combined with Inaba and Minami renders obvious the instant claimed toner.


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (703) 308-3625. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Nam Nguyen, can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3599 for after final faxes, and (703) 305-7718 for other official faxes.

Any inquiry of papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Alva Catlett, whose telephone number is (703) 308-1100.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JLD  
October 30, 2001

  
JANIS L. DOTE  
PRIMARY EXAMINER  
GROUP 1500-  
1700